

CLAIMS

1. An interrupt management apparatus comprising:
an interrupt controller for controlling interrupt
reporting to an interrupt handler with an interrupt mask;

5 save processing means for saving information on a
task being executed when said interrupt is generated;

interrupt source judging means for determining an
interrupt processing task to perform processing according
to said interrupt source;

10 interrupt managing means for holding interrupt
acceptance possibility states prepared for each interrupt
source independently of said interrupt handler;

interrupt mask canceling means for controlling
interrupt enabling for an interrupt processing task;

15 multiple interruption control means for performing
interrupt mask update control according to processing
of said interrupt managing means and said interrupt mask
canceling means;

interrupt mask control means for performing
20 transition of processing between a determined interrupt
processing task and said interrupt handler; and

task restoration processing means for restoring
information on a task being executed at the time of
interrupt generation that was saved by said save
25 processing means and restarting processing of the
suspended task.

2. The interrupt management apparatus according to
claim 1, further comprising:

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initialization task managing means for storing the call address of a task for performing task initialization processing independently of said interrupt handler;

5 execution task control means for holding information on a task being executed;

initialization task indicating means for setting a task for which initialization processing is necessary; and

10 task management control means for performing judgment as to whether or not initialization processing is necessary for a suspended task when returning to said suspended task according to processing of said execution task control means and said initialization task indicating means, and if returning to a task for which
15 initialization processing is necessary, executing a call of a task for performing initialization processing stored in said initialization task managing means.

3. The interrupt management apparatus according to claim 2, further comprising:

20 task control means for performing determination of a processing task that is subject to processing and for storing a call address for each processing task;

a task manager that has dispatch processing means for performing called processing task switching
25 processing according to processing of initialization task managing means; and

task suspension processing means for calling said dispatch processing means without performing restoration

of information on the task being executed at the time of interrupt generation that was saved by said save processing means;

wherein said task management control means performs judgment as to whether or not initialization processing is necessary for a suspended task when returning to the suspended task according to processing of said execution task control means and initialization task indicating means, and if returning to a task for which initialization processing is necessary, calling said task suspension processing means, and if initialization processing is not necessary, calling said task restoration processing means.

4. The interrupt management apparatus according to claim 3, further comprising, in said task manager, initialization control means for performing task initialization control according to processing of said initial task managing means.

5. An interrupt management method comprising the steps of:

controlling interrupt reporting to an interrupt handler with an interrupt mask;

saving information on a task being executed at the time of interrupt generation by means of this control;

determining an interrupt processing task to perform processing according to the source of said interrupt;

holding interrupt acceptance possibility states prepared for each said interrupt source independently

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of said interrupt handler;

performing interrupt mask update control according to interrupt mask cancellation information for controlling interrupt enabling in said interrupt processing task and information on said interrupt acceptance possibility states;

performing transition of processing between a determined interrupt processing task and said interrupt handler;

restoring said saved information on a task being executed at the time of interrupt generation; and restarting processing of the suspended task.

6. The interrupt management method according to claim 5, further comprising the steps of:

holding initialization task management information that stores the call address of a task for performing task initialization processing, executing task information, and initialization task indicating information for setting a task for which initialization processing is necessary, independently of said interrupt handler; and

performing judgment as to whether or not initialization processing is necessary for a suspended task when returning to said suspended task according to said execution task control information and said initialization task indicating information, and if returning to a task for which initialization processing is necessary, executing a call of a task for performing

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initialization processing stored in said initialization task management information.

7. The interrupt management method according to claim 6, further comprising the steps of:

5 performing determination of a processing task that is subject to processing;

performing called processing task switching processing according to execution task processing information and initialization task management
10 information that store a call address for each processing task;

performing said switching processing without performing restoration of saved information on the task being executed at the time of interrupt generation;

15 performing judgment as to whether or not suspended task initialization processing is necessary when returning to a suspended task according to said execution task control information and said initialization task indicating information;

20 performing said task suspension processing if returning to a task for which initialization processing is necessary; and

performing task restoration processing if initialization processing is not necessary.

25 8. The interrupt management method according to claim 7, further comprising the steps of:

performing task initialization control using said initialization task management information; and

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performing task switching processing using said execution task control information.

9. A recording medium on which is recorded a program that executes an interrupt management method, said
5 interrupt management method comprising the steps of:

controlling interrupt reporting to an interrupt handler with an interrupt mask;

saving information on a task being executed at the time of interrupt generation by means of this control;

10 determining an interrupt processing task to perform processing according to the source of said interrupt;

holding interrupt acceptance possibility states prepared for each said interrupt source independently of said interrupt handler;

15 performing interrupt mask update control according to interrupt mask cancellation information for controlling interrupt enabling in said interrupt processing task and information on said interrupt acceptance possibility states;

20 performing transition of processing between a determined interrupt processing task and said interrupt handler;

restoring said saved information on a task being executed at the time of interrupt generation; and

25 restarting processing of the suspended task.

10. An operating system provided with processing functions according to an interrupt management method, said interrupt management method comprising the steps

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of:

controlling interrupt reporting to an interrupt handler with an interrupt mask;

5 saving information on a task being executed at the time of interrupt generation by means of this control;

determining an interrupt processing task to perform processing according to the source of said interrupt;

10 holding interrupt acceptance possibility states prepared for each said interrupt source independently of said interrupt handler;

performing interrupt mask update control according to interrupt mask cancellation information for controlling interrupt enabling in said interrupt processing task and information on said interrupt acceptance possibility states;

performing transition of processing between a determined interrupt processing task and said interrupt handler;

20 restoring said saved information on a task being executed at the time of interrupt generation; and

restarting processing of the suspended task.

11. A signal processing processor provided with processing functions according to an interrupt management method, said interrupt management method comprising the steps of:

controlling interrupt reporting to an interrupt handler with an interrupt mask;

saving information on a task being executed at the

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time of interrupt generation by means of this control;

determining an interrupt processing task to perform processing according to the source of said interrupt;

holding interrupt acceptance possibility states
5 prepared for each said interrupt source independently of said interrupt handler;

performing interrupt mask update control according to interrupt mask cancellation information for controlling interrupt enabling in said interrupt
10 processing task and information on said interrupt acceptance possibility states;

performing transition of processing between a determined interrupt processing task and said interrupt handler;

15 restoring said saved information on a task being executed at the time of interrupt generation; and

restarting processing of the suspended task.

12. An image terminal apparatus provided with an interrupt management apparatus, said interrupt
20 management apparatus comprising:

an interrupt controller for controlling interrupt reporting to an interrupt handler with an interrupt mask;

save processing means for saving information on a task being executed when said interrupt is generated;

25 interrupt source judging means for determining an interrupt processing task to perform processing according to said interrupt source;

interrupt managing means for holding interrupt

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acceptance possibility states prepared for each interrupt source independently of said interrupt handler;

interrupt mask canceling means for controlling interrupt enabling for an interrupt processing task;

5 multiple interruption control means for performing interrupt mask update control according to processing of said interrupt managing means and said interrupt mask canceling means;

10 interrupt mask control means for performing transition of processing between a determined interrupt processing task and said interrupt handler; and

task restoration processing means for restoring information on a task being executed at the time of interrupt generation that was saved by said save processing means and restarting processing of the suspended task.

13. A mobile communication system provided with an image terminal apparatus, said image terminal apparatus having an interrupt management apparatus comprising:

20 an interrupt controller for controlling interrupt reporting to an interrupt handler with an interrupt mask;

save processing means for saving information on a task being executed when said interrupt is generated;

25 interrupt source judging means for determining an interrupt processing task to perform processing according to said interrupt source;

interrupt managing means for holding interrupt acceptance possibility states prepared for each interrupt

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source independently of said interrupt handler;

interrupt mask canceling means for controlling
interrupt enabling for an interrupt processing task;

multiple interruption control means for performing
5 interrupt mask update control according to processing
of said interrupt managing means and said interrupt mask
canceling means;

interrupt mask control means for performing
transition of processing between a determined interrupt
10 processing task and said interrupt handler; and

task restoration processing means for restoring
information on a task being executed at the time of
interrupt generation that was saved by said save
processing means and restarting processing of the
15 suspended task.

14. An interrupt management apparatus comprising:
an interrupt handler for stipulating processing for
each interrupt source;

interrupt managing means for holding interrupt
20 acceptance possibility states prepared for each interrupt
source independently of said interrupt handler; and

interrupt mask canceling means, provided
independently of said interrupt handler, for canceling
a mask set for an interrupt source for which an interrupt
25 is accepted;

wherein said interrupt handler controls interrupt
enabling/disabling for each interrupt source by updating
an interrupt mask using said interrupt managing means

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and said interrupt mask canceling means.

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